

---

**Name of Organization:** Michigan Tech Center for Science and Environmental Outreach

**Type of Organization:** College or University

**Contact Information:** Ms. Kristine Bradof

Michigan Technological University

1400 Townsend Drive

Houghton MI 49931

**Phone:** (906) 487 - 3341 **Extension:**

**Fax:** (906) 487 - 1620

**E-Mail:** kbradof@mtu.edu

---

**Project Title:** Development of SOLEC Land Use and Societal Indicators

**Project Category:** Indicator Development

**Rank by Organization (if applicable):** 0

**Total Funding Requested (\$):** 42,420 **Project Duration:** 1 Years

**Abstract:**

This project will further develop the priority land-use indicator (# 7053, Green Planning Process) and five of the societal indicators (#3509 and #3510, Capacities and Organizational Richness of Sustainable Landscape Partnerships; #3511 and #3512, Integration of Ecosystem Management and Sustainability Principles Across Landscapes; and #3513, Citizen/Community Place-Based Stewardship Activities), using the Lake Superior Basin as an area of manageable scale for collecting data and testing possible measures of each indicator that will be applicable elsewhere in the Great Lakes.

The project will

- (1) Survey sustainability indicators developed by other projects not previously considered by SOLEC to help refine the current suite of SOLEC land use and societal indicators.
- (2) Gather available information for each of 6 underdeveloped land use and societal indicators, focusing primarily but not exclusively on the Lake Superior Basin.
- (3) Compare U.S. 2000 Census data with existing 1990 data for Lake Superior LaMP 2000 sustainability indicator measures that coincide with or complement SOLEC land use and societal indicators in order to document trends.
- (4) Maintain dialogues regarding potential indicator measures and benchmarks with the SOLEC Indicator Group and Land Use and Societal Core Groups, the Developing Sustainability Committee of the Lake Superior Work Group, the Lake Superior Binational Forum, and groups working on SOLEC indicator development in other parts of the Great Lakes Basin.
- (5) Prepare tables, figures, and maps to illustrate the chosen measures and submit a final report with supporting materials.

---

**Geographic Areas Affected by the Project**

**States:**

<input type="checkbox"/> Illinois	<input type="checkbox"/> New York
<input type="checkbox"/> Indiana	<input type="checkbox"/> Pennsylvania
<input checked="" type="checkbox"/> Michigan	<input checked="" type="checkbox"/> Wisconsin
<input checked="" type="checkbox"/> Minnesota	<input type="checkbox"/> Ohio

**Lakes:**

<input checked="" type="checkbox"/> Superior	<input type="checkbox"/> Erie
<input checked="" type="checkbox"/> Huron	<input type="checkbox"/> Ontario
<input checked="" type="checkbox"/> Michigan	<input type="checkbox"/> All Lakes

**Geographic Initiatives:**

<input type="checkbox"/> Greater Chicago	<input type="checkbox"/> NE Ohio	<input type="checkbox"/> NW Indiana	<input type="checkbox"/> SE Michigan	<input type="checkbox"/> Lake St. Clair
------------------------------------------	----------------------------------	-------------------------------------	--------------------------------------	-----------------------------------------

**Primary Affected Area of Concern:** Not Applicable

**Other Affected Areas of Concern:**

---

**Problem Statement:**

The State of the Lakes Ecosystem Conference (SOLEC) 2000 and the EPA Great Lakes National Program Office have identified one land-use and seven societal indicators of sustainability that are most in need of further development. Some of the other indicators in those categories have data for only a few areas of the Great Lakes Basin. In addition, comments on Version 3 of the SOLEC "Selection of Indicators for Great Lakes Basin Ecosystem Health" suggested other measures to make various land-use and societal indicators more useful and comprehensive. The Lake Superior Lakewide Management Plan (LaMP) 2000 identified the need for development of similar sustainability indicators and measures.

A common thread among most indicator development processes is to always look for ways to improve existing or proposed indicators but to gather data in the meantime that may show trends leading to refinements or new combinations of indicators. This approach would benefit the underdeveloped SOLEC indicators.

Most of the existing SOLEC indicators grew out of documents specific to the Great Lakes Basin. Many groups outside the Basin are also developing sustainability indicators that combine environmental, economic, and societal factors in new ways such as the Genuine Progress Indicator or its European equivalent, the Index of Sustainable Economic Welfare. Progress on these efforts are now tracked by several groups, including the International Institute for Sustainable Development, Redefining Progress, Sustainable Measures, and the Sustainable Community Indicators Program and Sustainability Reporting Program in Canada, as well as websites for individual projects. Consulting these information sources will likely provide useful input to the SOLEC process.

**Proposed Work Outcome:**

This project will address the priority land-use indicator (# 7053, Green Planning Process) and five of the societal indicators (#3509 and #3510, Capacities and Organizational Richness of Sustainable Landscape Partnerships; #3511 and #3512, Integration of Ecosystem Management and Sustainability Principles Across Landscapes; and #3513, Citizen/Community Place-Based Stewardship Activities), using the Lake Superior Basin as an area of manageable scale for collecting data and testing possible measures of each indicator that will be applicable elsewhere in the Great Lakes. Indicator work in the Lake Superior Basin is among the most advanced in the region because of its early start, but it also needs to fill gaps in similar land-use and societal indicators.

The Center for Science and Environmental Outreach at Michigan Technological University, in collaboration with the Developing Sustainability Committee of the Lake Superior Work Group, recently completed a report on "Baseline Sustainability Data for the Lake Superior Basin" (EPA Grant No. X995434-01). The report, which includes maps, tables, figures, and contact information, complements data collected from other locations for the following SOLEC indicators: urban [and rural] density, mass transportation, drinking water quality, economic prosperity, water withdrawal, energy

---

consumption, and solid waste generation. Some measures in the report expand on the existing SOLEC indicators and address comments made to the Indicators Group regarding changes in population density, traffic volumes, mode and duration of travel to work, wastewater treatment volumes and design flows, water withdrawals by use category and watershed, percent of workers and income by sector, family and household income, housing costs as a percentage of income, educational attainment, crime rate, and poverty rate. This earlier project also identified information sources that will be useful for the targeted SOLEC indicators.

The proposed project will

- (1) Survey sustainability indicators developed by other projects not previously considered by SOLEC to help refine the current suite of SOLEC land use and societal indicators. Any new indicators will be compared with the SOLEC database of indicators already considered, as well as the comments in Appendix 9.
- (2) Gather available information for each of 6 underdeveloped land use and societal indicators, focusing primarily but not exclusively on the Lake Superior Basin.
- (3) Compare U.S. 2000 Census data to existing 1990 data for Lake Superior LaMP 2000 sustainability indicator measures that coincide with or complement SOLEC land use and societal indicators, as described above, in order to document trends.
- (4) Establish and maintain dialogues regarding potential indicator measures and benchmarks with the Indicator Group co-chairs and the Land Use and Societal Core Groups of SOLEC; the Developing Sustainability Committee and Lake Superior Binational Forum of the Lake Superior Binational Program; and groups working on SOLEC indicator development in other parts of the Great Lakes Basin.
- (5) Prepare tables, figures, and maps to illustrate the chosen measures and submit a final report with supporting materials.

The project proposes the following general procedure for obtaining data, using the Green Planning Process as an example. With the assistance of regional planning offices, identify the counties, townships, cities, and villages to be surveyed. Most of the regional agencies will have information on the basic measure, the percentage of local government units that have land-use and resource conservation plans in place. To obtain more detailed data, the project collaborators will develop a list of desirable land-use or resource conservation measures for each community to check off if their plan specifically includes that measure. The regional planning agencies may have that information or could help distribute surveys to their communities. (Having local/regional partners should improve the response rate). Beyond that, other questions could target an issue of concern in certain areas, for example, increasing shoreline development in the Keweenaw, Leelanau, and Bayfield Peninsulas, especially for second homes or distant commuters. Such development relates to habitat fragmentation and affordability problems for people dependent on local jobs, which are largely seasonal and minimum-wage. These kinds of linkages will improve the utility of the suite of indicators for policymakers. The final step is to gather the survey responses into a database that can be linked to ArcView GIS for mapping of the results.

Much information about integration of ecosystem management and sustainability principles into government and agency programs and projects can be found on the Internet, with direct follow-up as needed. Some relevant documentation has already been gathered as part of the Lake Superior baseline sustainability data project. These agencies and governments will also be resources for identifying sustainable landscape partnerships and citizen/community place-based stewardship activities, as will environmental networks such as the Great Lakes Information Network.

Surveys of citizen/community place-based stewardship activities and sustainable landscape partnerships will focus on organizations within the Lake Superior Basin but will include regional, national, and binational organizations (such as The Nature Conservancy, National Wildlife Federation, and Great Lakes United), along with their projects elsewhere in the Great Lakes. Similarly, any information obtained from other efforts in, say, the Lake Michigan or Huron watersheds (Lake Michigan Federation, Les Cheneaux Economic Forum) will be reported.

The information gathered for SOLEC land-use and societal indicators will benefit the sustainability indicators work of the Lake Superior Binational Program and vice versa. For LaMPs not yet using socioeconomic sustainability indicators, this approach will help them evaluate the utility of such indicators. The interaction of the Developing Sustainability and Habitat Committees of the Lake Superior Work Group also serves as a conduit for data on other SOLEC land-use indicators.

An underlying theme of the project will look for ways to enhance the relevance of the indicators, emphasize the benefits to target groups of adopting policies that move the indicators in a positive direction, and diffuse the information as widely as possible to decisionmakers. Key organizations within appropriate social networks will be identified whenever possible for their potential influence in diffusion. For example, the Lake Superior Basin baseline sustainability indicators project documented the prominent role that the Western Lake Superior Sanitary District played in a number of waste reduction

---

and recycling efforts, including a national model for banning the sale of mercury thermometers.

---

**Project Milestones:**

**Dates:**

Project Start	09/2001
Complete QAPP	10/2001
Update Census data; research indicators	11/2001
Develop data collection surveys	12/2001
Complete interim report	02/2002
Finish collecting data for indicators	08/2002
Complete final report	09/2002
Project End	09/2002

---

☒ Project Addresses Environmental Justice

**If So, Description of How:**

Documenting the geographic variability in land use and societal sustainability indicators through GIS maps, charts, and narrative helps to identify and quantify areas of inequity in environmental justice. Examples of measures that this project will update for the Lake Superior Basin with 2000 Census data to show trends since 1990 are per capita income, family and household income, housing costs as a percentage of income, unemployment rate, extent of poverty, and educational attainment. Such demographic information can be examined in relation to the locations of landfills, contamination sites, industries with toxic emissions, etc.

☒ Project Addresses Education/Outreach

**If So, Description of How:**

The results will be added to the information disseminated by SOLEC and the Lake Superior Binational Program via websites and conferences and secondarily by other groups that track progress on Great Lakes issues (such as the National Wildlife Federation, Great Lakes United, and the Lake Superior Alliance). As in the previous baseline sustainability data project, the final report and appendices containing contact information, tables, figures, and maps will be saved as PDF files for easy portability and dissemination. The project will look for ways to enhance the relevance of the indicators, emphasize the benefits to target groups of adopting policies that move the indicators in a positive direction, and diffuse the information widely to decisionmakers. Key organizations within appropriate social networks will be identified whenever possible for their potential influence in diffusion.

---

**Project Budget:**

	<b>Federal Share Requested (\$)</b>	<b>Applicant's Share (\$)</b>
<b>Personnel:</b>	17,936	1,250
<b>Fringe:</b>	7,157	203
<b>Travel:</b>	800	770
<b>Equipment:</b>	0	0
<b>Supplies:</b>	1,200	0
<b>Contracts:</b>	0	0
<b>Construction:</b>	0	0
<b>Other:</b>	1,000	277
<b>Total Direct Costs:</b>	28,093	2,500
<b>Indirect Costs:</b>	14,327	0
<b>Total:</b>	42,420	2,500
<b>Projected Income:</b>	0	0

---

**Funding by Other Organizations (Names, Amounts, Description of Commitments):**

Developing Sustainability Committee of the Lake Superior Binational Program, \$2,500 in-kind, as itemized above under "Applicant's Share" and in a letter of commitment from the Committee's U.S. co-chair to Michigan Technological University.

---

**Description of Collaboration/Community Based Support:**

The Developing Sustainability Committee (DSC) of the Lake Superior Work Group and the Lake Superior Binational Forum are working on indicator development and will collaborate on this project. The DSC has issued a letter of commitment stating that they will (1) serve as the project's primary contact with the chairs of the SOLEC Land Use and Societal Core Groups for coordination of indicator efforts via telephone calls and meetings, (2) help to locate previously unexplored sources of data relevant to land use and societal ecosystem indicators, and (3) review and edit the project's interim report (which will be included in whole or part in the LaMP 2002 document for Lake Superior) and the final report prior to the external vetting process.